

PATENT ABSTRACTS OF JAPAN

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(54) METHOD AND DEVICE FOR MARKING WIRE

(57)Abstract:

PROBLEM TO BE SOLVED: To improve the degree of freedom of marking and the degree of freedom of lay-out of device with the simple structure by arranging an ink supplying unit near a wire, and discharging the ink from such ink supplying unit so as to adhere the ink to the surface of the wire.

SOLUTION: An extruding machine 14 for extruding a wire insulating body 12, which is made of synthetic resin, to the surface of a wire conductor 10 is provided, and while an ink supplying unit 20 for marking the surface of the insulating body 12 is provided in the downstream of the extruding machine 14. A wire formed with the insulating body 12 is carried in the longitudinal direction by the extruding machine 14, and while a motor is continuously operated so as to always discharge the ink 18 from a nozzle 23, and a continuous straight mark can be thereby given to the surface of the insulating body 12. The ink 18 can be intermittently discharged by turning on and off the motor so as to give a dot mark, and while length and pitch of the mark can be freely adjusted by the operation of motor. Consequently, degree of freedom of marking and lay-out of the device can be improved.



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CLAIMS

[Claim(s)]

- [Claim 1] The marking approach of the electric wire characterized by to arrange the ink feeder which carries out the regurgitation of the above-mentioned ink from a nozzle tip by holding the ink for marking and pressurizing this near the above-mentioned electric wire, to make ink breathe out from this ink feeder, and to make it adhere to the front face of the above-mentioned electric wire in the marking approach of the electric wire for carrying out marking to an electric-wire front face along with that longitudinal direction while conveying an electric wire to the above-mentioned longitudinal direction.
- [Claim 2] The marking approach of the electric wire characterized by making it adhere to the front face of the electric wire which has ink breathed out from the above-mentioned nozzle conveyed in the marking approach of an electric wire according to claim 1 directly.
- [Claim 3] The marking approach of the electric wire characterized by making the ink which contact a roller on the front face of the electric wire conveyed in the marking approach of an electric wire according to claim 1, and this roller is interlocked with an electric wire, and it is made to rotate, and is breathed out by the front face of this roller from the nozzle of the above-mentioned ink feeder adhere.
- [Claim 4] The marking approach of the electric wire characterized by ***** which is made to perform the regurgitation of the above-mentioned ink intermittently, and attaches a dotted-line-like mark on the surface of an electric wire in the marking approach of an electric wire according to claim 1 to 3.
- [Claim 5] Marking equipment of the electric wire characterized by to have the ink feeder which carries out the regurgitation of the above-mentioned ink from a nozzle tip by being arranged near the above-mentioned electric wire, holding the ink for marking in the marking equipment of the electric wire for performing marking to the front face of the electric wire conveyed by the longitudinal direction along with that longitudinal direction, and pressurizing this, and the driving means which carries out pressurization actuation of the above-mentioned ink to this ink feeder.
- [Claim 6] Marking equipment of the electric wire characterized by having arranged each ink feeder so that the ink which is equipped with two or more ink feeders, and is breathed out from these ink feeders in the marking equipment of an electric wire according to claim 5 may adhere to coincidence in a location which is different in the hoop direction in an electric-wire front face.
- [Claim 7] Marking equipment of the electric wire characterized by having arranged each ink feeder so that the ink which is equipped with two or more ink feeders which hold the ink of a mutually different color in the marking equipment of an electric wire according to claim 5 or 6, and is breathed out from these ink feeders may be alternatively supplied to an electric-wire front face.
- [Claim 8] Marking equipment of the electric wire characterized by breathing out in common the ink which prepares a nozzle single about two or more above-mentioned ink feeders, and is held in each ink feeder in the marking equipment of an electric wire according to claim 7 from the above-mentioned nozzle.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the marking approach of an electric wire and equipment which are used for the wire harness for automobiles etc.

[0002]

[Description of the Prior Art] Conventionally, generally the thing using a marking roller as ***** which gives the mark for displaying the class and cross section to the front face of an electric wire is known (reference, such as JP, 7-25517, U). The example is shown in drawing 16. This equipment is equipped with the lower marking roller 90 and the upper presser-foot roller 92 which pinch the electric wire D conveyed by the longitudinal direction from the upper and lower sides. A crevice 94 is intermittently installed in the front face of the marking roller 90 by the hoop direction side by side, and the bottom half section of the marking roller 90 is dipped in the ink 96 in the ink stowage container 95. The marking roller 90 is in the condition which carried out the pressure welding to the front face of an electric wire D like illustration, and rotates at the rate corresponding to the bearer rate of an electric wire according to the frictional force.

[0003] According to such equipment, only the ink 96 in which the ink 96 which the ink 96 in the ink stowage container 95 was pumped up, among those has adhered to front faces other than crevice 94 in the marking roller 90 failed to be scratched a knife 98, and invaded in the crevice 94 adheres to the front face of an electric wire D intermittently with rotation of the above-mentioned marking roller 90. That is, a dotted-line-like mark is given to the front face of an electric wire D.

[0004]

[Problem(s) to be Solved by the Invention] The following technical problems which should be solved occur with the equipment shown in said drawing 16.

[0005] a) It is necessary to make the marking roller 90 estrange from an electric wire D to stop marking. That is, it must constitute switchable in the location where this roller 90 carries out the pressure welding of the marking roller 90 to an electric wire D, and the location to estrange, and equipment becomes large-scale.

[0006] b) Since it is the structure where the lower part of the marking roller 90 is immersed in the ink 96 in the ink stowage container 95, the marking roller 90 can contact only from a lower part to an electric wire D. Therefore, it was not able to be said that it made ink adhere to a location which will receive remarkable constraint in the layout of equipment, and is different in the hoop direction to the front face of an electric wire D at coincidence.

[0007] c) the ink 96 which adhered to front faces other than crevice 94 the ** case which attaches the above dot marks -- a knife -- although it is necessary to scratch in the 98th grade, perfect scraping is difficult, and when ink remains into parts other than crevice 94, it has a possibility that a mark may fade.

[0008] d) In the above-mentioned equipment, when the die length of a dotted-line-like mark is changed or it attaches the mark of the shape of a continuous straight line, it must exchange for what has the structure which suited the configuration of a mark of the marking roller 90 each time. That is, whenever it changes a mark configuration, the marking roller 90 must be exchanged, and the efficiency of an activity is bad.

[0009] e) When changing the color of marking, the ink 96 in the crimson stowage container 95 must be changed to the ink of other colors, and such an activity is troublesome.

[0010] This invention aims at offering the marking approach of an electric wire and equipment which can solve the above technical problems.

[0011]

[Means for Solving the Problem] As above-mentioned The means for solving a technical problem, this invention In the marking approach of the electric wire for carrying out marking to an electric-wire front face along with the longitudinal direction While conveying an electric wire to the above-mentioned longitudinal direction, arrange the ink feeder which carries out the regurgitation of the above-mentioned ink from a nozzle tip near the above-mentioned electric wire, ink is made to breathe out from this ink feeder, and it is made to adhere to the front face of the above-mentioned electric wire by holding the ink for marking and pressurizing this:

[0012] According to this approach, only the part made to breathe out from an ink feeder can make ink adhere to an electric wire. If it puts in another way, marking can be stopped to the timing of arbitration by stopping the regurgitation of the ink from the above-mentioned ink feeder. Moreover, since an ink feeder can be made to approach from the direction of arbitration to an electric wire, the part to which ink is made to adhere in an electric wire can also be set up freely.

[0013] Furthermore, by making the regurgitation of the above-mentioned ink perform intermittently, ***** which attaches a dotted-line-like mark vividly on the surface of an electric wire is possible, and, moreover, the pitch and die length of a mark can be easily changed only by changing the time amount of the above-mentioned regurgitation.

[0014] Contact a roller on the front face of the electric wire conveyed, and this roller is interlocked with an electric wire, it is made make the ink breathed out from the above-mentioned nozzle here adhere to the front face of the electric wire conveyed directly, and to rotate, and you may make it make the ink breathed out by the front face of this roller from the nozzle of the above-mentioned ink feeder adhere.

[0015] Moreover, in the marking equipment of the electric wire for performing marking to the front face of the electric wire conveyed by the longitudinal direction along with that longitudinal direction, this invention is arranged near the above-mentioned electric wire, and is equipped with the ink feeder which carries out the regurgitation of the above-mentioned ink from a nozzle tip, and the driving means which carries out pressurization actuation of the above-mentioned ink to this ink feeder by holding the ink for marking and pressurizing this.

[0016] Furthermore, ***** which gives two or more marks to a common electric wire at coincidence is possible by having two or more ink feeders, and arranging each ink feeder with this equipment, so that it may adhere to coincidence in the location where the ink breathed out from these ink feeders differs in that hoop direction in an electric-wire front face.

[0017] Moreover, it has two or more ink feeders which hold the ink of a mutually different color, and if each ink feeder is arranged so that the ink breathed out from these ink feeders may be alternatively supplied to an electric-wire front face, the color of the ink to be used can be immediately switched only by switching the ink feeder to operate.

[0018] Although the management which it is easy to dry ink at the nozzle tip, and prevents this is needed here in the ink feeder which holds the ink of the color seldom used when a nozzle is prepared in each ink feeder Prepare a nozzle single about two or more above-mentioned ink feeders, and it is made for the ink held in each ink feeder to supply an electric-wire front face from the above-mentioned nozzle in common. If the regurgitation of ink is made from the above-mentioned nozzle when using every color, ink desiccation in a nozzle tip can be prevented.

[0019]

[Embodiment of the Invention] The gestalt of operation of the 1st of this invention is explained based on drawing 1 and drawing 2.

[0020] The electric-wire manufacturing installation shown in drawing 1 equips the front face of a conductor 10 with the extruder 14 which carries out extrusion molding of the insulator 12 which consists of synthetic resin, and the ink feeder 20 for carrying out marking to the downstream on the front face of the above-mentioned insulator 12 is formed.

[0021] This ink feeder 20 and its driving means are shown in drawing 2. The ink feeder 20 has in one the cylinder part 21 which holds the ink 18 for marking, the taper section 22 whose diameter is gradually reduced from this cylinder part 21, and the nozzle 23 of the minor diameter which extends from this taper section 22 to them. A piston 24 is held in the above-mentioned cylinder part 21, and the piston rod 26 is installed in back from this piston 24. And where the tip of the above-mentioned nozzle 23 is turned to the front face of the above-mentioned insulator 12, through the bracket 28, the above-mentioned

cylinder 21 hangs to the ceiling wall of housing 30, and is supported.

[0022] The rail 31 parallel to the shaft orientations of the above-mentioned ink feeder 20 is laid in the bottom wall of housing 30, and the slide block 32 is installed in it possible [a slide] along with this rail 31. And the back end of the piston rod 26 of the above-mentioned ink feeder 20 ****s in the upper part of this slide block 32, and it is fixed to it by 34.

[0023] The lower part of the above-mentioned slide block 32 is used as a nut parallel to the shaft orientations of the above-mentioned ink feeder 20, it ****s in the condition of penetrating this, and the shaft 36 is screwed. The front end of this screw-thread shaft 36 is supported pivotable through bearing 37 and its bracket 38 at the bottom wall side of housing 30, and the back end is connected with the output shaft 41 of the motor 40 fixed on this bottom wall through coupling 42. Therefore, by ****ing by actuation of the above-mentioned motor 40, and carrying out the rotation drive of the shaft 36, the slide drive of a slide block 32 and the piston 34 is carried out at one, and the ink 18 in a cylinder part 21 is pressurized by this piston 34, and it is breathed out from the tip of a nozzle 23.

[0024] According to such equipment, ***** which attaches the mark (straight mark) of the shape of a straight line which followed the front face of an insulator 12 is made by carrying out continuation actuation of the motor 40, and making ink 18 always breathe out from a nozzle 23, conveying the electric wire with which the insulator 12 was fabricated by the extruder 14 to the longitudinal direction. Moreover, during conveyance of the above-mentioned electric wire, by making a motor 40 turn on and off, and making ink 18 breathe out intermittently, ***** which gives a dotted-line-like mark (dot mark) to the front face of an insulator 12 is made, and the die length and the pitch of a mark can also be freely adjusted only by changing the ON time amount of the above-mentioned motor 40.

[0025] Furthermore, with this equipment, unlike what is immersed in ink in the lower part of a marking roller like before, ink can be made to adhere from any directions to an insulator 12, and the degree of freedom of the layout of equipment increases sharply. Moreover, as shown in drawing 3 as a gestalt of the 2nd operation, by arranging the ink feeder 20 on an electric-wire lower part and upper each, ink 18 can be made to adhere to the vertical side of an insulator 12 at coincidence, and, thereby, the width of face of marking can be expanded further.

[0026] Furthermore, as shown in drawing 4 as a gestalt of the 3rd operation, the color of the ink to be used can also be immediately switched by arranging two or more ink feeders 20 side by side to an electric-wire longitudinal direction (longitudinal direction of drawing), and switching the ink feeder 20 to operate, if the ink 18 of a color which is different in each ink feeder 20, respectively is held.

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EFFECT OF THE INVENTION

[Effect of the Invention] Since arrange the ink feeder which carries out the regurgitation of the above-mentioned ink from a nozzle tip by holding the ink for marking while this invention conveys an electric wire to a longitudinal direction as mentioned above, and pressurizing this near the above-mentioned electric wire, ink is made to breathe out from this ink feeder and it is made to adhere to the front face of the above-mentioned electric wire, it is an easy configuration, and marking and its halt can be performed and the layout of equipment can also be set up freely.

[0043] Furthermore, by making the regurgitation of the above-mentioned ink perform intermittently, ***** which attaches a dotted-line-like mark vividly on the surface of an electric wire is possible, and it is effective in the ability to change the pitch and die length of a mark easily only by changing the time amount of the above-mentioned regurgitation moreover.

[0044] Moreover, when making it the ink which is equipped with the roller which is interlocked with an electric wire and rotates, turns the nozzle of the above-mentioned ink feeder to the front face of this roller, and is breathed out from this nozzle adhere directly on the surface of an electric wire, it arranges to the peripheral surface of the above-mentioned roller in that hoop direction, and two or more heights prepare, and if the above-mentioned ink feeder arranges so that ink may be made to adhere to the front face of these heights, ***** which certainly gives a clear dot mark to an electric wire will be made.

[0045] Furthermore, in this invention, it has two or more ink feeders, and if each ink feeder is arranged so that the ink breathed out from these ink feeders may adhere to coincidence in a location which is different in the hoop direction in an electric-wire front face, the effectiveness as for which ***** which gives two or more marks to coincidence is made to a common electric wire will be acquired.

[0046] Moreover, the effectiveness which can switch the color of the ink to be used immediately only by switching the ink feeder to operate is acquired by having two or more ink feeders which hold the ink of a mutually different color, and arranging each ink feeder so that the ink breathed out from these ink feeders may be alternatively supplied to an electric-wire front face.

[0047] And the effectiveness which can prevent ink desiccation in a nozzle tip is acquired by preparing a nozzle single about two or more above-mentioned ink feeders, and breathing out in common the ink held in each ink feeder from the above-mentioned nozzle.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] The following technical problems which should be solved occur with the equipment shown in said drawing 16.

[0005] a) It is necessary to make the marking roller 90 estrange from an electric wire D to stop marking. That is, it must constitute switchable in the location where this roller 90 carries out the pressure welding of the marking roller 90 to an electric wire D, and the location to estrange, and equipment becomes large-scale.

[0006] b) Since it is the structure where the lower part of the marking roller 90 is immersed in the ink 96 in the ink stowage container 95, the marking roller 90 can contact only from a lower part to an electric wire D. Therefore, it was not able to be said that it made ink adhere to a location which will receive remarkable constraint in the layout of equipment, and is different in the hoop direction to the front face of an electric wire D at coincidence.

[0007] c) the ink 96 which adhered to front faces other than crevice 94 the ** case which attaches the above dot marks -- a knife -- although it is necessary to scratch in the 98th grade, perfect scraping is difficult, and when ink remains into parts other than crevice 94, it has a possibility that a mark may fade.

[0008] d) In the above-mentioned equipment, when the die length of a dotted-line-like mark is changed or it attaches the mark of the shape of a continuous straight line, it must exchange for what has the structure which suited the configuration of a mark of the marking roller 90 each time. That is, whenever it changes a mark configuration, the marking roller 90 must be exchanged, and the efficiency of an activity is bad.

[0009] e) When changing the color of marking, the ink 96 in the crimson stowage container 95 must be changed to the ink of other colors, and such an activity is troublesome.

[0010] This invention aims at offering the marking approach of an electric wire and equipment which can solve the above technical problems.

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MEANS

[Means for Solving the Problem] As above-mentioned The means for solving a technical problem, this invention In the marking approach of the electric wire for carrying out marking to an electric-wire front face along with the longitudinal direction While conveying an electric wire to the above-mentioned longitudinal direction, arrange the ink feeder which carries out the regurgitation of the above-mentioned ink from a nozzle tip near the above-mentioned electric wire, ink is made to breathe out from this ink feeder, and it is made to adhere to the front face of the above-mentioned electric wire by holding the ink for marking and pressurizing this.

[0012] According to this approach, only the part made to breathe out from an ink feeder can make ink adhere to an electric wire. If it puts in another way, marking can be stopped to the timing of arbitration by stopping the regurgitation of the ink from the above-mentioned ink feeder. Moreover, since an ink feeder can be made to approach from the direction of arbitration to an electric wire, the part to which ink is made to adhere in an electric wire can also be set up freely.

[0013] Furthermore, by making the regurgitation of the above-mentioned ink perform intermittently, ***** which attaches a dotted-line-like mark vividly on the surface of an electric wire is possible, and, moreover, the pitch and die length of a mark can be easily changed only by changing the time amount of the above-mentioned regurgitation.

[0014] Contact a roller on the front face of the electric wire conveyed, and this roller is interlocked with an electric wire, it is made make the ink breathed out from the above-mentioned nozzle here adhere to the front face of the electric wire conveyed directly, and to rotate, and you may make it make the ink breathed out by the front face of this roller from the nozzle of the above-mentioned ink feeder adhere.

[0015] Moreover, in the marking equipment of the electric wire for performing marking to the front face of the electric wire conveyed by the longitudinal direction along with that longitudinal direction, this invention is arranged near the above-mentioned electric wire, and is equipped with the ink feeder which carries out the regurgitation of the above-mentioned ink from a nozzle tip, and the driving means which carries out pressurization actuation of the above-mentioned ink to this ink feeder by holding the ink for marking and pressurizing this.

[0016] Furthermore, ***** which gives two or more marks to a common electric wire at coincidence is possible by having two or more ink feeders, and arranging each ink feeder with this equipment, so that it may adhere to coincidence in the location where the ink breathed out from these ink feeders differs in that hoop direction in an electric-wire front face.

[0017] Moreover, it has two or more ink feeders which hold the ink of a mutually different color, and if each ink feeder is arranged so that the ink breathed out from these ink feeders may be alternatively supplied to an electric-wire front face, the color of the ink to be used can be immediately switched only by switching the ink feeder to operate.

[0018] Although the management which it is easy to dry ink at the nozzle tip, and prevents this is needed here in the ink feeder which holds the ink of the color seldom used when a nozzle is prepared in each ink feeder Prepare a nozzle single about two or more above-mentioned ink feeders, and it is made for the ink held in each ink feeder to supply an electric-wire front face from the above-mentioned nozzle in common. If the regurgitation of ink is made from the above-mentioned nozzle when using every color, ink desiccation in a nozzle tip can be prevented.

[0019]

[Embodiment of the Invention] The gestalt of operation of the 1st of this invention is explained based on drawing 1 and drawing 2.

[0020] The electric-wire manufacturing installation shown in drawing 1 equips the front face of a conductor 10 with the extruder 14 which carries out extrusion molding of the insulator 12 which consists of synthetic resin, and the ink feeder 20 for carrying out marking to the downstream on the front face of the above-mentioned insulator 12 is formed.

[0021] This ink feeder 20 and its driving means are shown in drawing 2. The ink feeder 20 has in one the cylinder part 21 which holds the ink 18 for marking, the taper section 22 whose diameter is gradually reduced from this cylinder part 21, and the nozzle 23 of the minor diameter which extends from this taper section 22 to them. A piston 24 is held in the above-mentioned cylinder part 21, and the piston rod 26 is installed in back from this piston 24. And where the tip of the above-mentioned nozzle 23 is turned to the front face of the above-mentioned insulator 12, through the bracket 28, the above-mentioned cylinder 21 hangs to the ceiling wall of housing 30, and is supported.

[0022] The rail 31 parallel to the shaft orientations of the above-mentioned ink feeder 20 is laid in the bottom wall of housing 30, and the slide block 32 is installed in it possible [a slide] along with this rail 31. And the back end of the piston rod 26 of the above-mentioned ink feeder 20 ****s in the upper part of this slide block 32, and it is fixed to it by 34.

[0023] The lower part of the above-mentioned slide block 32 is used as a nut parallel to the shaft orientations of the above-mentioned ink feeder 20, it ****s in the condition of penetrating this, and the shaft 36 is screwed. The front end of this screw-thread shaft 36 is supported pivotable through bearing 37 and its bracket 38 at the bottom wall side of housing 30, and the back end is connected with the output shaft 41 of the motor 40 fixed on this bottom wall through coupling 42. Therefore, by ****ing by actuation of the above-mentioned motor 40, and carrying out the rotation drive of the shaft 36, the slide drive of a slide block 32 and the piston 34 is carried out at one, and the ink 18 in a cylinder part 21 is pressurized by this piston 34, and it is breathed out from the tip of a nozzle 23.

[0024] According to such equipment, ***** which attaches the mark (straight mark) of the shape of a straight line which followed the front face of an insulator 12 is made by carrying out continuation actuation of the motor 40, and making ink 18 always breathe out from a nozzle 23, conveying the electric wire with which the insulator 12 was fabricated by the extruder 14 to the longitudinal direction. Moreover, during conveyance of the above-mentioned electric wire, by making a motor 40 turn on and off, and making ink 18 breathe out intermittently, ***** which gives a dotted-line-like mark (dot mark) to the front face of an insulator 12 is made, and the die length and the pitch of a mark can also be freely adjusted only by changing the ON time amount of the above-mentioned motor 40.

[0025] Furthermore, with this equipment, unlike what is immersed in ink in the lower part of a marking roller like before, ink can be made to adhere from any directions to an insulator 12, and the degree of freedom of the layout of equipment increases sharply. Moreover, as shown in drawing 3 as a gestalt of the 2nd operation, by arranging the ink feeder 20 on an electric-wire lower part and upper each, ink 18 can be made to adhere to the vertical side of an insulator 12 at coincidence, and, thereby, the width of face of marking can be expanded further.

[0026] Furthermore, as shown in drawing 4 as a gestalt of the 3rd operation, the color of the ink to be used can also be immediately switched by arranging two or more ink feeders 20 side by side to an electric-wire longitudinal direction (longitudinal direction of drawing), and switching the ink feeder 20 to operate, if the ink 18 of a color which is different in each ink feeder 20, respectively is held. Moreover, it also becomes possible to put in order and carry out coincidence adhesion of the ink of a mutually different color on an insulator 12.

[0027] The gestalt of the 4th operation is shown in drawing 5. Here, contacted the roller 50 on the front face of an insulator 12, and this roller 50 was interlocked with the electric wire, it is made to rotate, and the nozzle 23 of the ink feeder 20 is turned to the front face of this roller 50. And he makes the ink 18 breathed out from this nozzle 23 adhere to the peripheral surface of a roller 50 first, and is trying to make the front face of an insulator 12 imprint the above-mentioned ink 18 from this roller 50.

[0028] In addition, the cutting machine 15 which disconnects the electric wire with which the insulator 12 was fabricated, and the sticking-by-pressure machine 16 which fixes a terminal to the both ends of the disconnected electric wire in total are formed in order at the downstream of the above-mentioned roller 54.

[0029] As mentioned above, the effectiveness which was excellent also when this invention carried not only the thing that makes the regurgitation ink from the ink feeder 20 adhere to a direct electric wire but the roller 50 is acquired. For example, ink 18 can be made to adhere to the vertical side of an insulator 12 like the gestalt of said 2nd operation at coincidence by arranging the rollers 50 and 60 of a pair, as an

electric wire is inserted from the upper and lower sides, and making the peripheral surface of each rollers 50 and 60 point to the nozzle 23 of the ink feeder 20, respectively, as shown in drawing 6 as a gestalt of the 5th operation.

[0030] Here, an example of the suitable structure of both the rollers 50 and 60 in the case of carrying out a roller 50 to a straight mark, and carrying out a roller 60 to a dot mark is shown in drawing 7 (a) and (b). In drawing, that body 54 is fixed to a revolving shaft 52, the circumferential groove 56 of the width of face corresponding to the path of an electric wire is formed in the peripheral face of a body 54, and, as for the roller 50 for a straight mark, the nozzle 23 is arranged towards this circumferential groove 56. Although the body 64 is being fixed to the revolving shaft 62 also for the roller 60 for a dot mark, heights 65 are intermittently installed in a hoop direction by the peripheral face of a body 64 side by side, and the slot 66 of the width of face corresponding to the path of the above-mentioned electric wire is formed in each heights 65. And the nozzle 23 is arranged towards the heights 65 located in the predetermined angular position.

[0031] While ***** which gives a straight mark to the inferior surface of tongue of the insulator 12 with a roller 50 is made according to such equipment, stabilizing the location of the longitudinal direction of an electric wire by carrying out the conveyance, inserting an electric wire in the circumferential groove 56 and slot 66 of both rollers, ***** which stabilizes for it and gives a dot mark with the pitch corresponding to the arrangement pitch to the top face of an insulator 12 by each heights 65 of a roller 60 is made. Moreover, also in this roller 60, by changing the adhesion die length of the ink 18 to each heights 65, it is possible to adjust the die length of a dot mark, and it is also possible to carry out to make ink 18 adhere only to the specific heights 65 etc., and to change the pitch of a dot mark.

[0032] In addition, if the alphabetic character for an imprint is stamped on the roller like a common knowledge technique besides the above-mentioned straight mark or a dot mark and ink 18 is carried with the ink feeder 20 on it, it cannot be overemphasized that an alphabetic character mark can be attached.

[0033] Moreover, as shown in drawing 8 as a gestalt of the 6th operation, coincidence adhesion of the ink of a color which is mutually different possible [switching the color of ink immediately.] can be put in order and carried out on an insulator 12 like the gestalt of said 3rd operation only by change-over of the ink feeder 20 which operates by making it point to the nozzle 23 of two or more ink feeders 20 to each rollers 50 and 60.

[0034] In addition, when two or more ink feeders 20 are equipped and these are alternatively used like the gestalt of this 6th operation, or the gestalt of said 3rd operation, Although management at the tip of a nozzle 23 is needed since there is a possibility of ink 18 drying in the tip of the nozzle 23 about the ink feeder 20 which holds the ink of few [operating frequency] colors, and plugging up a nozzle 23 As shown in drawing 9 as a gestalt of the 7th operation, extend the nozzle 23 of each ink feeder 20 for a long time in the shape of a pipe, and it connects with the common ink set room 70. If the common nozzle 72 extended from this ink set room 70 is turned to an electric-wire front face, since the ink of every color will be breathed out in common from the same nozzle 72 This nozzle 72 has not said that it is left in a non-busy condition for a long time, and can prevent un-arranging according to the above-mentioned ink desiccation.

[0035] Furthermore, ink 18 can be made for a location which is different in a hoop direction in this electric wire to adhere to coincidence by turning two or more common nozzles 72 to an electric wire from a mutually different direction, as shown in drawing 10 as a gestalt of the 8th operation. Moreover, as shown in drawing 11 as a gestalt of the 10th operation, it is possible to also make ink 18 adhere to the front face of an insulator 12 through rollers 50 and 60.

[0036] As mentioned above, in this invention, since the degree of freedom of the mode of marking increases sharply compared with the former, various indication can be given using marking by this invention.

[0037] For example, as shown in drawing 12, the short lines 81 and 82 and the long line 83 are displayed on the order side by side, and the color of the short line 81 can express all the main parameters of an electric wire as a simple mark, if the agreement as which the color of the short line 82 shall mean the cross section (electric-wire size), and the color of the long line 83 shall mean the color type of the electric wire itself for the class of electric wire, respectively is established.

[0038] Moreover, a binary system is used, and if the agreement of a purport that the mark of a long line shows "1" and the mark of a short line shows "0", respectively is established, it will become possible to display numeric values (for example, electric-wire die length) various only in the combination of a long line and a short line. According to this agreement, a numeric value $101(\text{binary system}) = 5 (\text{decimal})$

number system) is expressed, for example as the mark of drawing 13 (a), similarly, by the mark of this drawing (b), a numeric value 1001(binary system) = 9 (decimal number system) will be displayed, and a numeric value 10111(binary system) = 23 (decimal number system) will be displayed by the mark of this drawing (c).

[0039] Moreover, if the color is defined corresponding to each integer from zero to nine, it will become possible to display a bigger numeric value only by ** which puts in order and attaches the mark of the color. For example, when 3 and blue established 4 and green establishes [white / 1 and yellow / 2 and red] the agreement of a purport that 8 and a verdure color mean 9 and purple means [5 and orange / 6 and gray / 7 and black] 0, respectively, If white and a line 85 have the blue line 84 among each lines 84 and 84 which put two in order and are formed as shown in drawing 14 , it means that the numeric value "14" was displayed by these lines 84 and 85.

[0040] ** which attaches a mark only near the terminal 88 of electric-wire both ends as especially the part that performs marking is not asked, either, but an electric wire is covered throughout the longitudinal direction, you may make it display on it in this invention and it is shown, for example in drawing 15 -- it is good even if like.

[0041] Thus, in this invention, since marking of various gestalten can be performed on the pre-insulation of an electric wire, even if the color of the pre-insulation of an electric wire itself is single, electric-wire discernment of abundant classes can be performed. Namely, if this invention approach and equipment are used, even if the color of the pre-insulation of an electric wire continues being primary color, for this reason, production efficiency can be raised [in / extrusion manufacture of an electric wire, the field of storage management etc. / sufficient discernment is possible and] sharply.

[0042]

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the general drawing showing the gestalt of operation of the 1st of this invention.

[Drawing 2] It is the sectional view showing the structure of the ink feeder concerning the gestalt of implementation of the above 1st, and its driving means.

[Drawing 3] It is the general drawing showing the gestalt of operation of the 2nd of this invention.

[Drawing 4] It is the general drawing showing the gestalt of operation of the 3rd of this invention.

[Drawing 5] It is the general drawing showing the gestalt of operation of the 4th of this invention.

[Drawing 6] It is the general drawing showing the gestalt of operation of the 5th of this invention.

[Drawing 7] A part of front view showing an example with each roller suitable for (a) in the gestalt of implementation of the above 5th and (b) are cross-section side elevations.

[Drawing 8] It is the general drawing showing the gestalt of operation of the 6th of this invention.

[Drawing 9] It is the general drawing showing the gestalt of operation of the 7th of this invention.

[Drawing 10] It is the general drawing showing the gestalt of operation of the 8th of this invention.

[Drawing 11] It is the general drawing showing the gestalt of operation of the 9th of this invention.

[Drawing 12] It is drawing showing the example of marking by this invention.

[Drawing 13] (a) - (c) is drawing showing the example of marking by this invention.

[Drawing 14] It is drawing showing the example of marking by this invention.

[Drawing 15] It is drawing showing the example which gave the mark only to the both ends of an electric wire by this invention.

[Drawing 16] It is the front view showing an example of conventional marking equipment.

[Description of Notations]

10 Conductor of Electric Wire.

12 Insulator of Electric Wire

18 Ink for Marking

20 Ink Feeder

23 Nozzle

24 Piston

40 Motor (Driving Means)

50 60 Roller

72 Common Nozzle

[Translation done.]

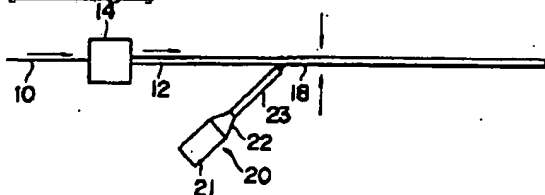
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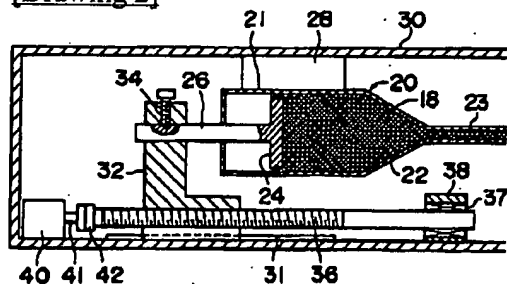
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DRAWINGS

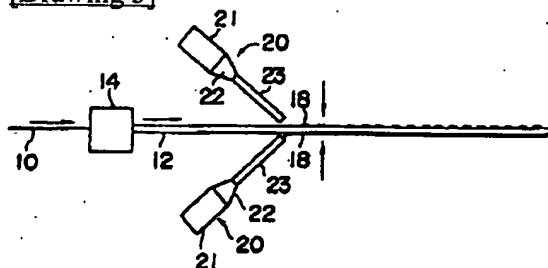
[Drawing 1]



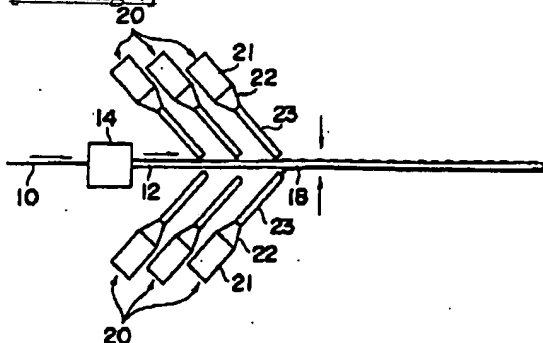
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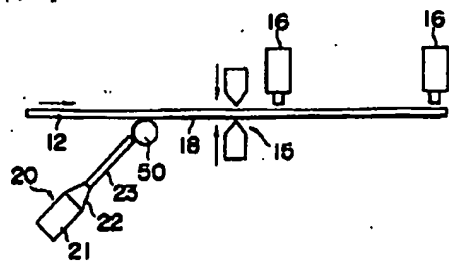
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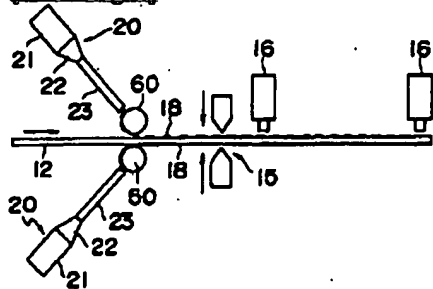
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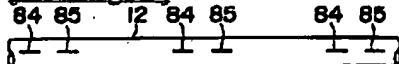
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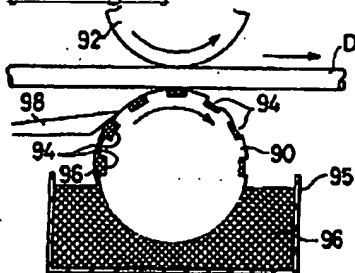
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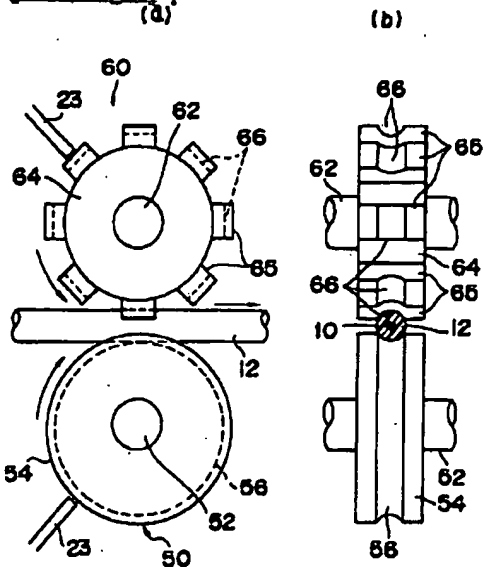
[Drawing 14]



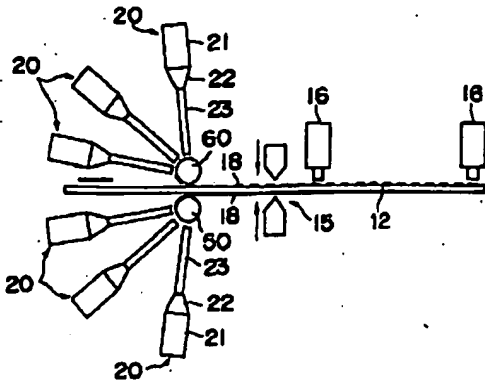
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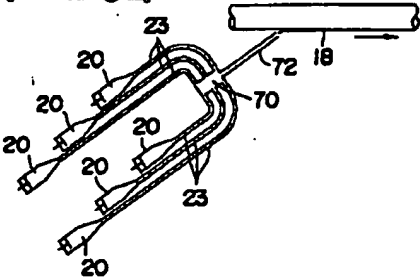
[Drawing 7]



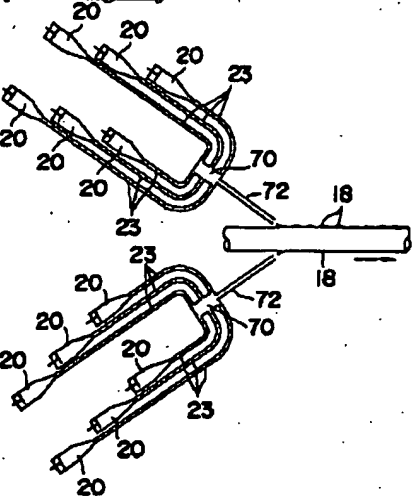
[Drawing 8]



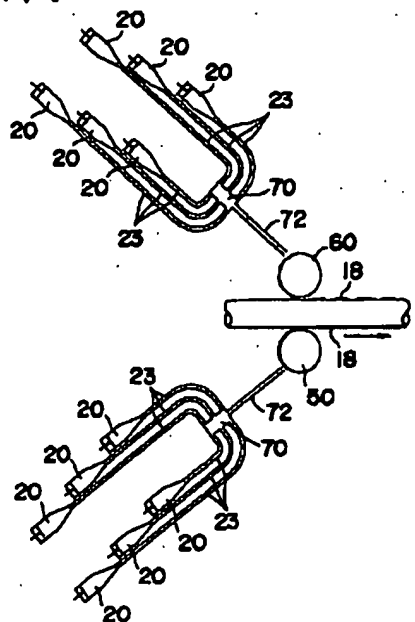
[Drawing 9]



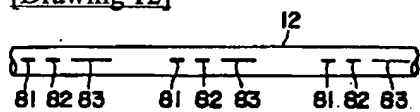
[Drawing 10]



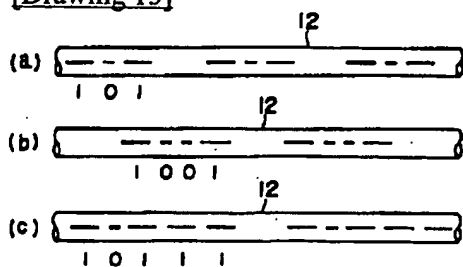
[Drawing 11]



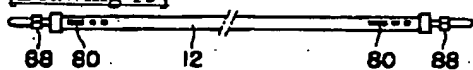
[Drawing 12]



[Drawing 13]



[Drawing 15]



[Translation done.]